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IS 11862 (1986): Hydraulic Loadcell [MED 8: Mining Techniques and Equipment]

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IS : 11862 - 1986

Indian Standard

(Reaffirmed 1996)

SPECIFICATION FOR HYDRAULIC LOADCELL

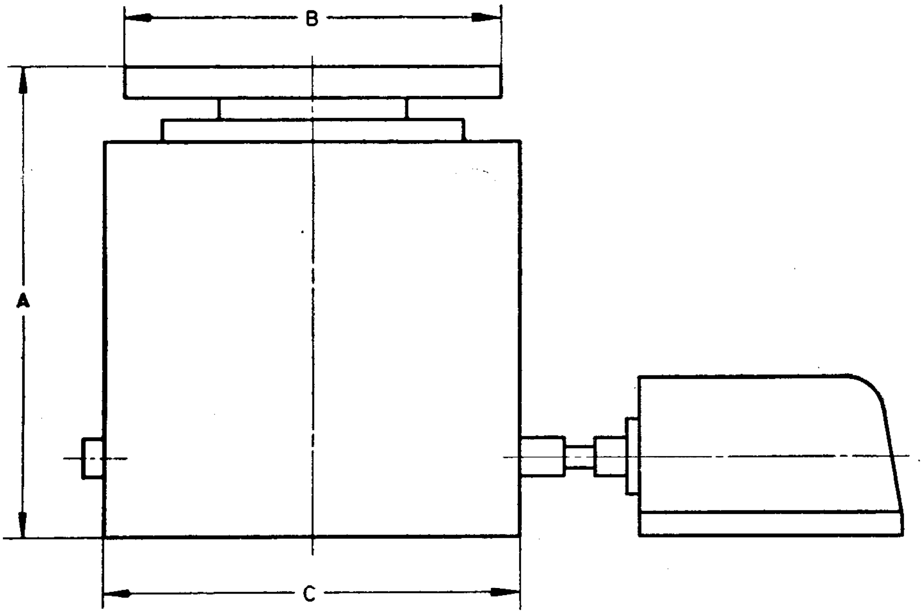
1. Scope — Covers the requirements of hydraulic loadcells for static operation and compression application.

2. Classification — The loadcells are classified as follows depending upon mounting of gauge:

H — Horizontal gauge mounted
V — Vertical gauge mounted
R — Remote gauge mounted.

3. Dimensions — The dimensions of loadcell shall be as given in Table 1.

TABLE 1 DIMENSIONS



All dimensions in millimetres

Capacity and Classification Code	Capacity Range	*A* *Max*	*B* *Max*	*C* *Max*
30 H	0 to 300 kN (≈ 30 t)	125	100	100
30 V				
30 R				
50 H	0 to 500 kN (≈ 50 t)	125	150	150
50 V				
50 R				
100 H	0 to 1 000 kN (≈ 100 t)	150	150	200
100 V				
100 R				
160 H	0 to 1 600 kN (≈ 160 t)	175	210	260
160 V				
160 R				

Mining Sectional Committee, EDC 50; Roof Supports Subcommittee, EDC 50 : 8 [Ref : Doc : EDC 50 (4449)]

Adopted 30 October 1986

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Gr 2

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4. Construction, Workmanship and Calibration

4.1 The loadcell may be manufactured with either flat or spherical seating.

4.2 All the components shall be precision machined.

4.3 All the external edges shall be free from burrs.

4.4 Cylinder shall be honed.

4.5 The gauge fitted on loadcell shall have an accuracy of calibration of ±2 percent of maximum scale reading. For this requirement 1 in 10 gauges of loadcells selected at random shall be checked. The calibration of the gauge over its full range, may be done either by comparison with a master gauge or a dead weight pressure tester.

4.5.1 The gauge fitted on the loadcell shall have a second needle, with external arrangement to reset it at zero, to indicate the maximum load registered.

4.5.2 The gauge fitted on the loadcell shall have a least count of 5 kN (0·5 t) for the loadcells up to and including a maximum load capacity of 300 kN (30 t) and 10 kN (1 t) for loadcells above 300 kN (30 t) maximum load capacity.

4.5.3 A thick metallic cover shall be provided on the dial gauge for its protection.

4.6 The loadcell may be manufactured with swivelling arrangement on the top plate.

5. Tests

5.1 *Type Tests* — The tests given in **5.3** to **5.6** shall be carried out by a duly approved testing organization on the prototype or on a loadcell selected at random from the lot first offered.

5.2 Routine Tests

5.2.1 All the loadcells shall be checked for requirements laid down in **3** and those not meeting the requirements shall be rejected.

5.2.2 A minimum of 0·5 percent of the production of the loadcells or minimum of one loadcell in case of production being less than 100 loadcells meeting the requirements of **5.2.1** shall be subjected to tests laid down in **5.3** and **5.4**.

5.3 *Performance Test* — The loadcell shall be subjected to a load of 100 percent of its maximum capacity for seven days continuously followed immediately by loading it to 125 percent of its maximum capacity for 30 minutes. After the test, loadcell shall not show any sign of leakage. It shall be then checked for its accuracy of calibration and shall meet the requirement laid down in **4.5**.

5.4 *Static Leakage Test*

5.4.1 *Leakage in unloaded loadcells* — A note shall be taken of any tendency for hydraulic fluid to leak from the loadcell. With the loadcell lying on the ground either in horizontal or in inclined position or in vertical position, it shall be noted if there is any hydraulic fluid leak from the loadcell. Loadcells having leak(s) shall be rejected.

5.4.2 *Leakage in loadcells in loaded condition* — The loadcell shall be checked at a load of 25 percent of its maximum capacity. The total loss of load shall be recorded for a period of 72 hours and it shall not be more than 2 percent of the maximum capacity of the loadcell.

5.4.3 The tests in **5.4.1** and **5.4.2** shall be carried out after completion of the tests in **5.3**.

5.5 After conducting the tests specified in **5.3** and **5.4** the loadcell shall be dismantled for the observation of any damage to loadcell or its components. In case of damage, the cause shall be found out and rectified in the loadcells of the lot represented by the loadcell under gone texts in **5.3** and **5.4**.

5.6 *Retesting* — In case of failure of loadcells(s), cause(s) of failure shall be investigated and rectified and the loadcell(s) retested. Further, loadcells(s) in number equal to the sample size initially taken in accordance with **5.2.2** shall be selected at random from the remaining lot and tested. The lot shall be accepted if all the samples pass.

6. Designation — A loadcell of 300 kN (30 t) maximum capacity with Horizontal gauge mounted shall be designated as:

LC 30 H

7. Marking — Each loadcell shall be marked with the designation and manufacturer's name and/or his recognized trade-mark.

7.1 *Certification Marking* — Details available with the Bureau of Indian Standards.

EXPLANATORY NOTE

This Indian Standard has been based on the existing experience in the field.

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